METHOD AND APPARATUS FOR AN INTERACTIVE VOLUMETRIC THREE DIMENSIONAL DISPLAY

ABSTRACT OF THE DISCLOSURE

A process and system for interactively displaying large (more than 1 million voxels) volumetric 3D images utilizing a sequence of helical slices of a 3D data set to generate a series of 2D images on a reflective surface of a light modulator. The series of 2D images generated on the light modulator are projected into a volumetric 3D-space display using an illumination light source and projection optics. Voxels in 3D space are illuminated for each 2D projected image, each voxel being located at its corresponding spatial location. A pulse from a wireless pulsed laser pointer forms a 3D bright voxel within the display volume. The pulse signal is synchronized with the rotating helix, and the orientation of the pointer and the phase of the pulse are controlled by the user to specify a 3D point in 3D space. A wireless receiver provides six degree-of-freedom (DOF) position of the spatial location of the pointer, as well as the phase signal. Optical encoders provide synchronization signals of the rotating helical display.

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